



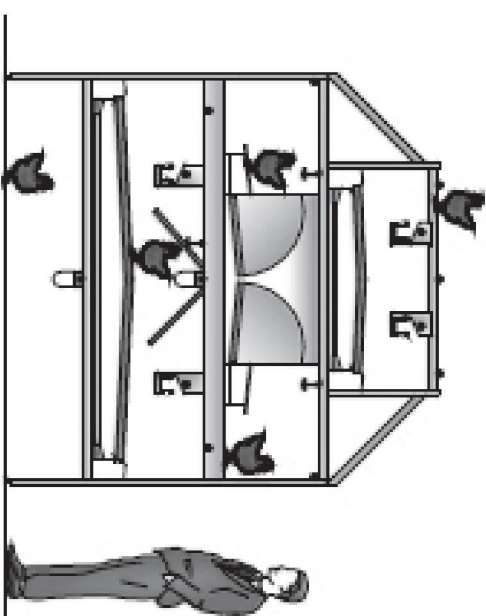
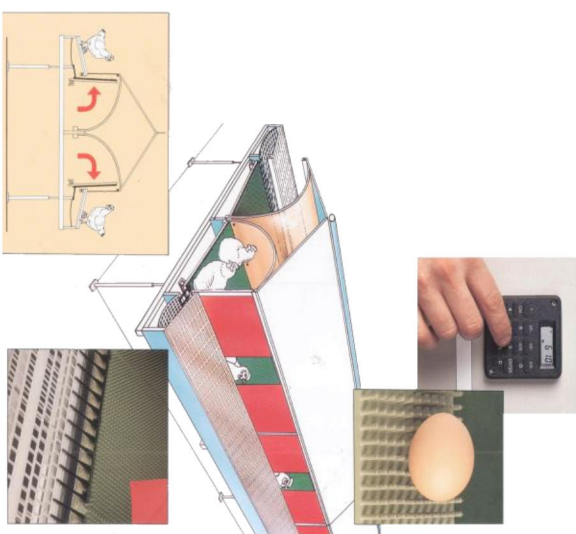


Welcome



V ENCOMATIC®

1983



Family Business

Founded in 1983

Cor and Han van de Ven

Since 2018 2nd generation in the business

- *Lotte van de Ven - Chief Executive Officer*
- *Ton van de Ven - Commercial Director*
- *Hanneke van de Ven - Team Leader After Sales*
- *Els van de Ven - Manager Warehouse*
- *Dick van de Ven - Product Designer*
- *Cor van de Ven - Founder*







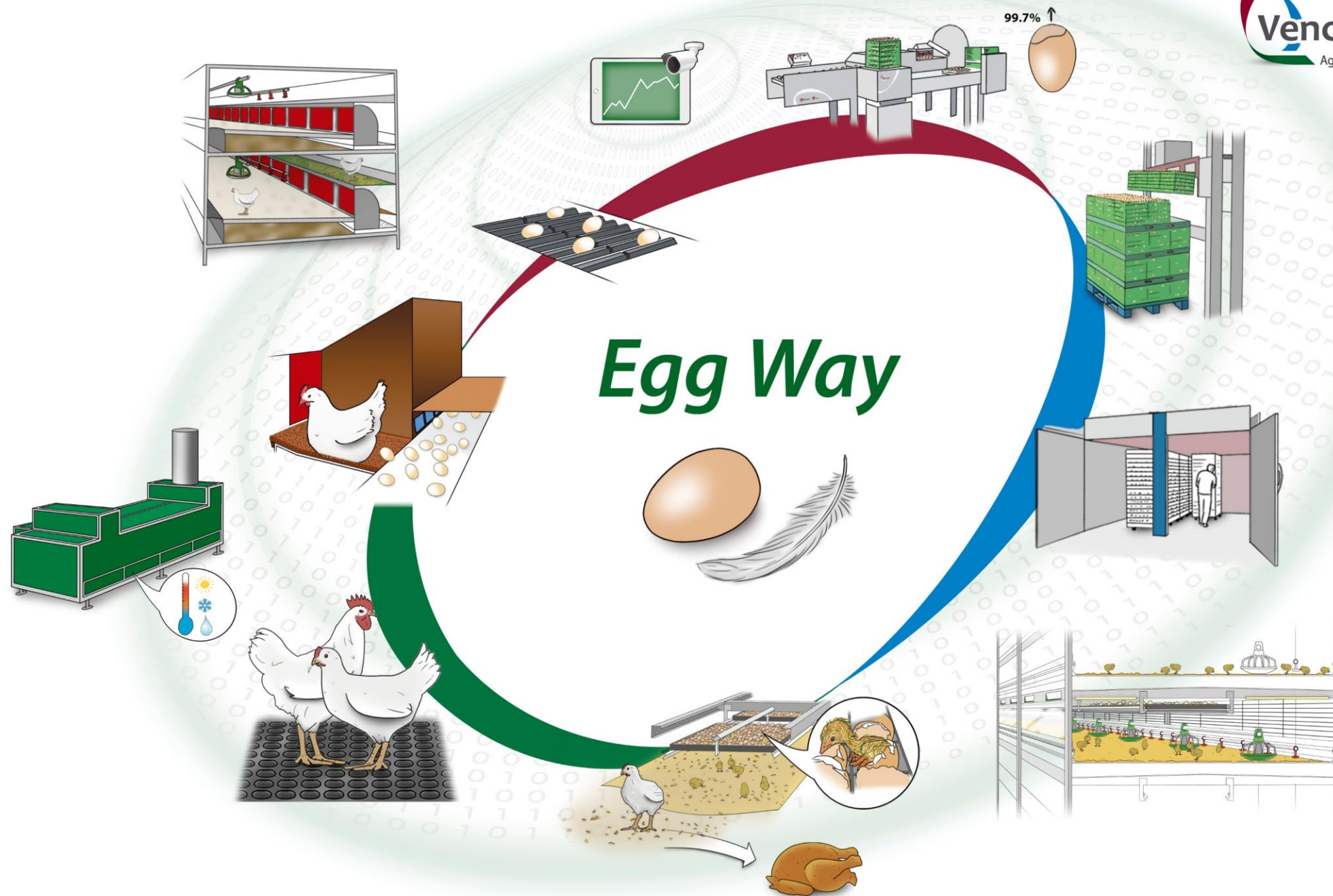
Worldwide presence - Dealer locations

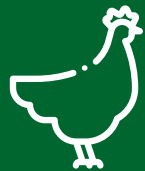




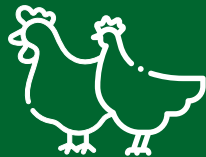
Venco Campus



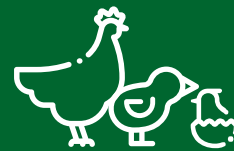




Layers



Breeders

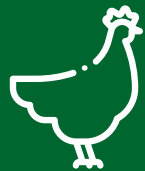


Broilers

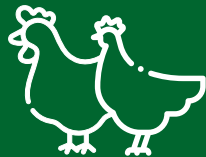


Hatchery
Automation

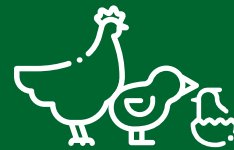




Layers



Breeders



Broilers



Hatchery
Automation



Agro Supply - Heat Exchanger



Canada



Belgium



Denmark



Sweden



Russia



Poland



Netherlands



Germany

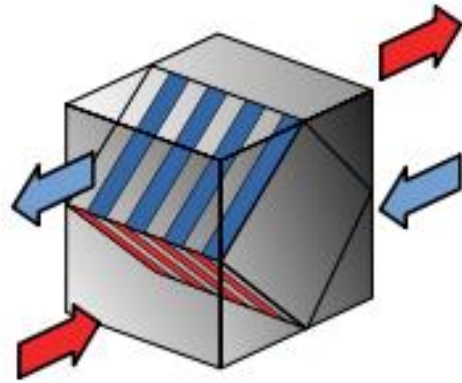


Austria



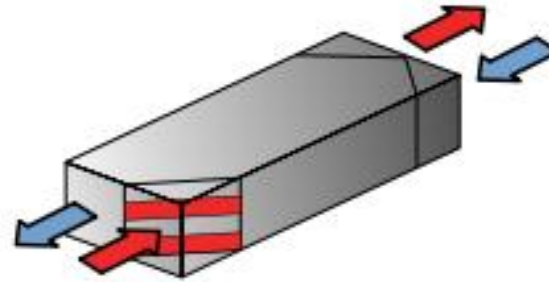
ECO Unit: heat exchange principle

Principle



Efficiency

50 - 70 %



Principle of ECO-Unit

70 - 80 %

ECO unit

Basic principle of the “Horizontal flat panel” unit

Thermal efficiency: 80%

Blow in temp. 17.6°C

Figure 1: Air flow fresh air

Outside temp. 0°C

House temp. 22°C

Thermal efficiency

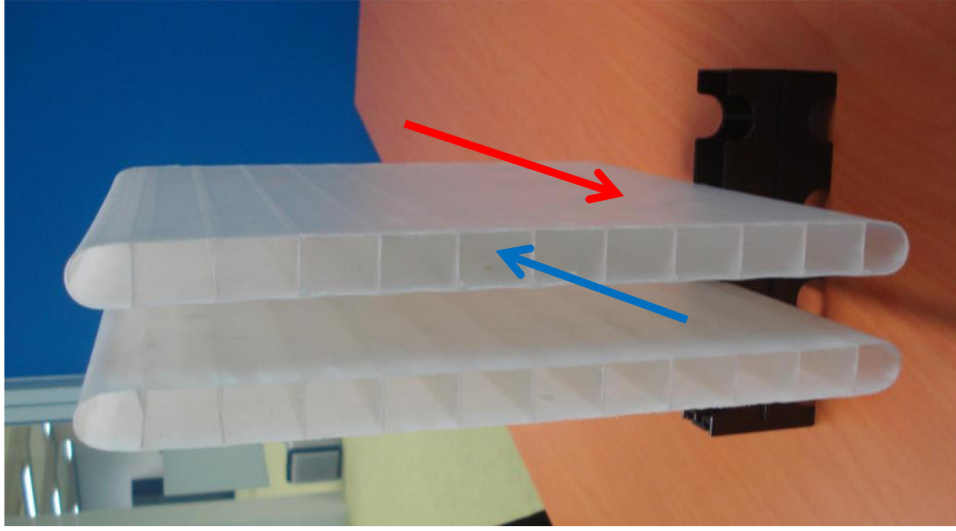
$$\frac{17.6 - 0}{22.0 - 0} = \frac{17.6}{22} = 80\%$$



Figure 2: Air flow house air

ECO Unit

Exchange Surface



6 high, 30,000m³ =
1.470 m² exchange
surface

Challenge: Use the body heat to heat the house....

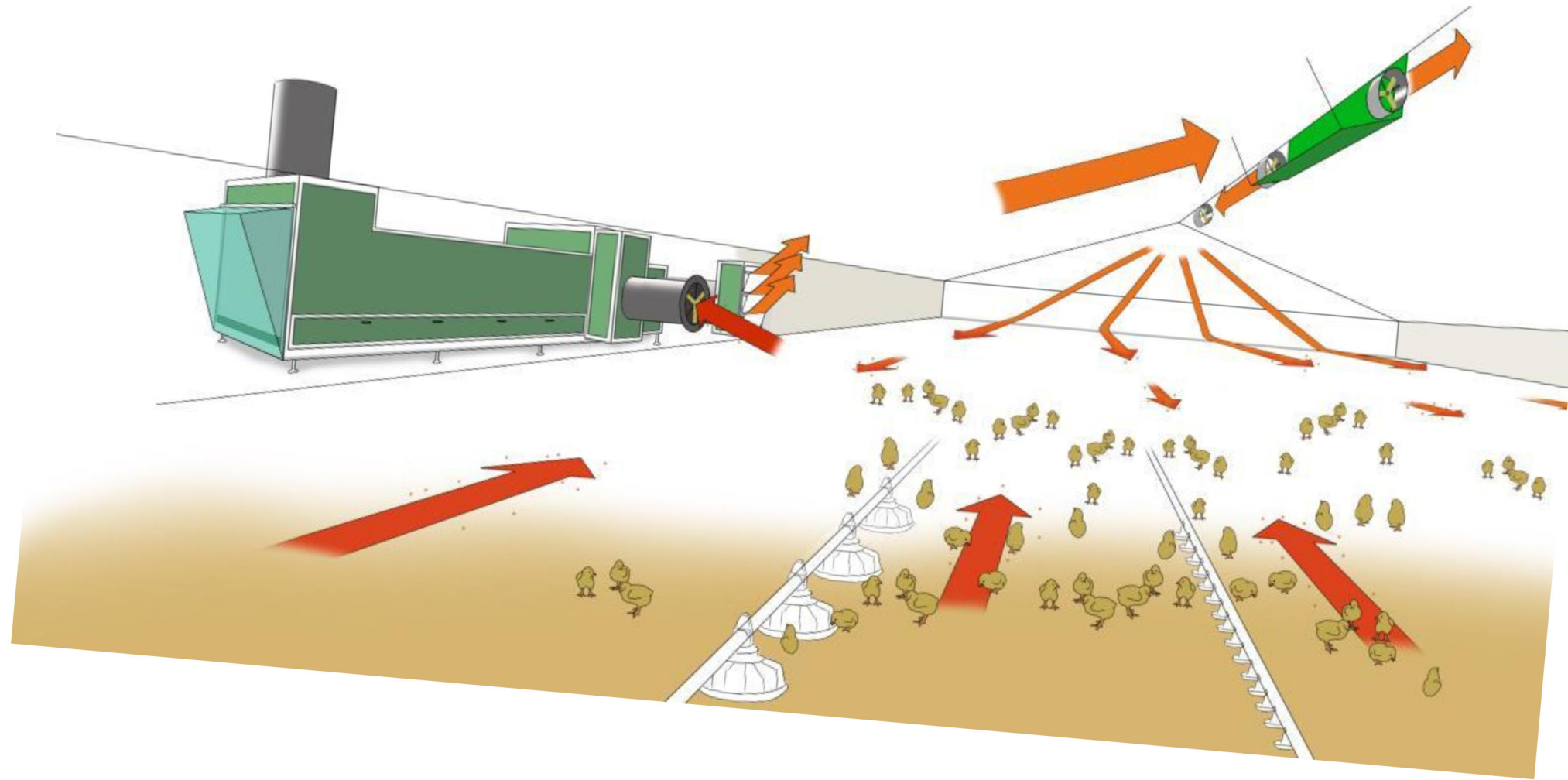
Temperature



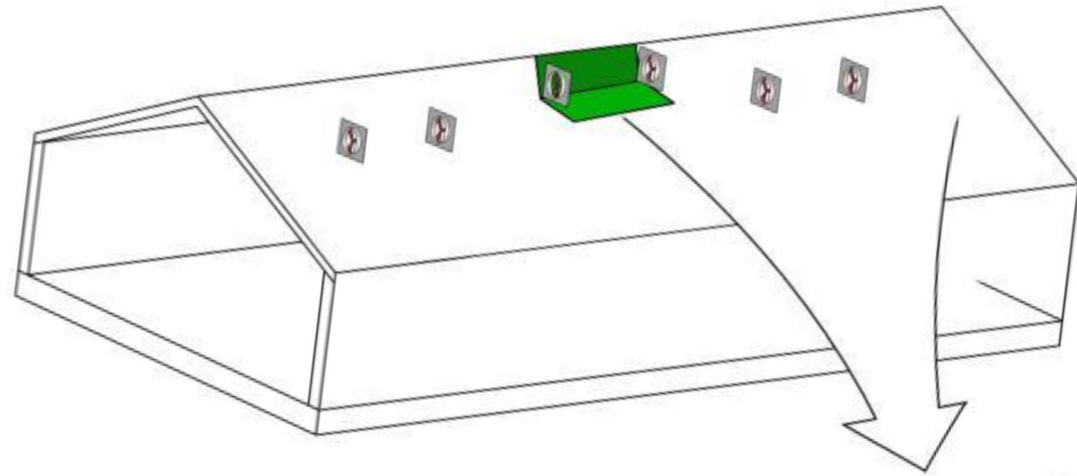
Air /Litter
quality



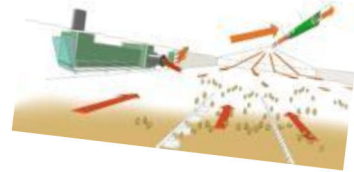
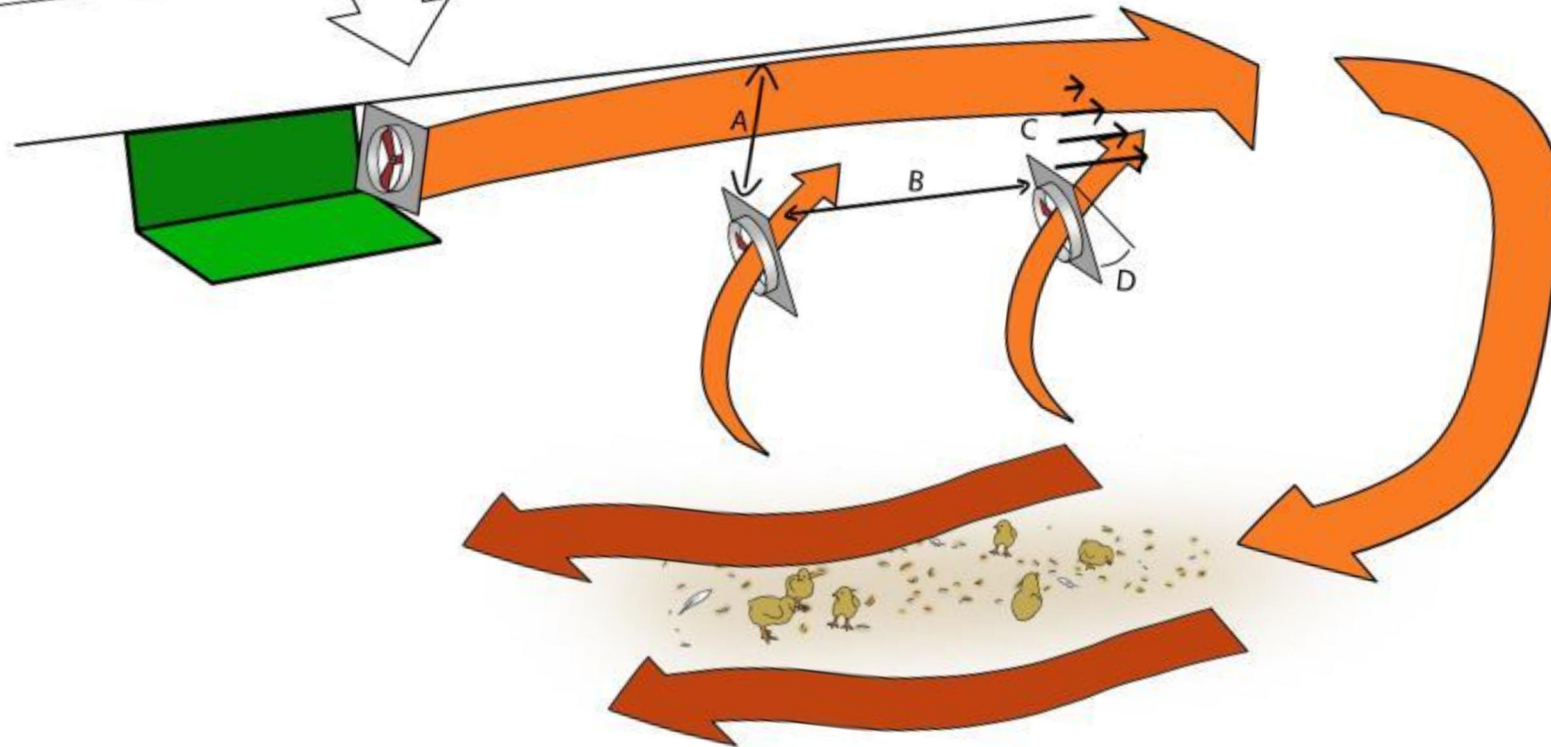
Creating a perfect climate



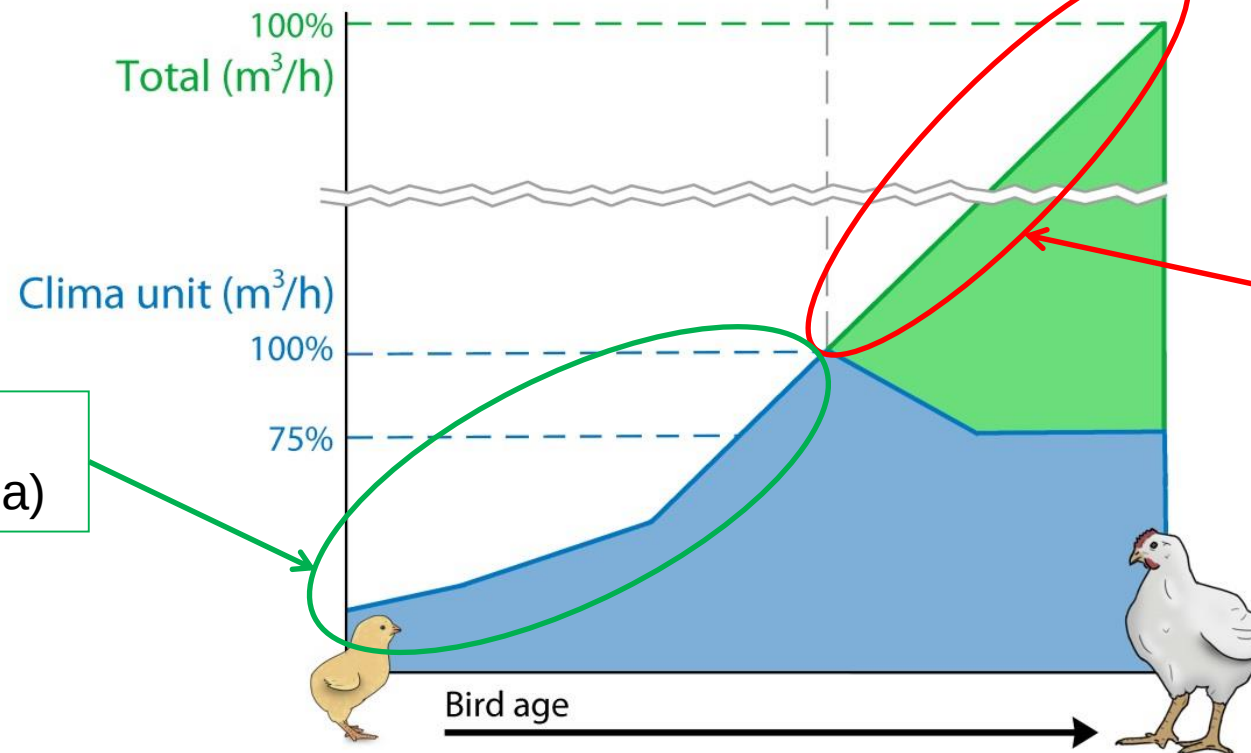
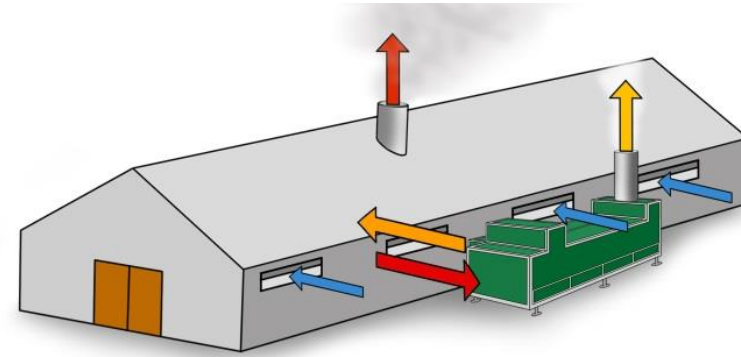
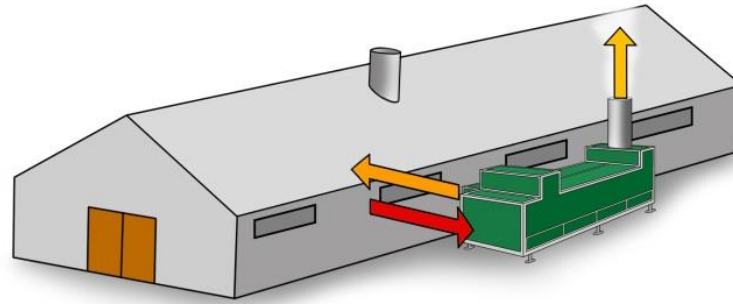
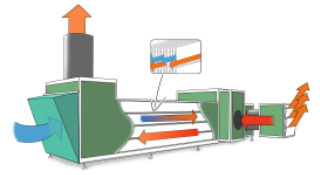
Circulation fans



- Success factors:
- A. Distance between roof and ventilator
 - B. Distance between ventilators
 - C. Speed of ventilator
 - D. Angle of ventilator



Ventilation curve ECO 200

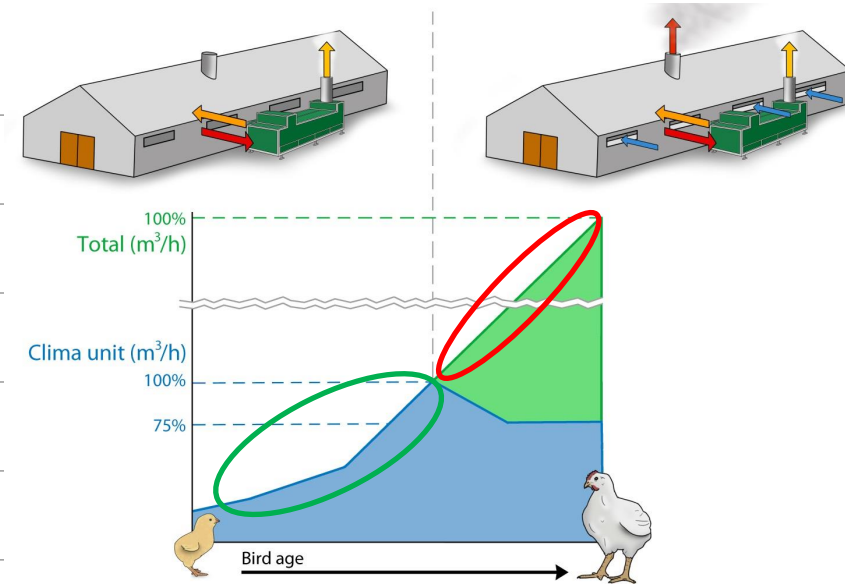
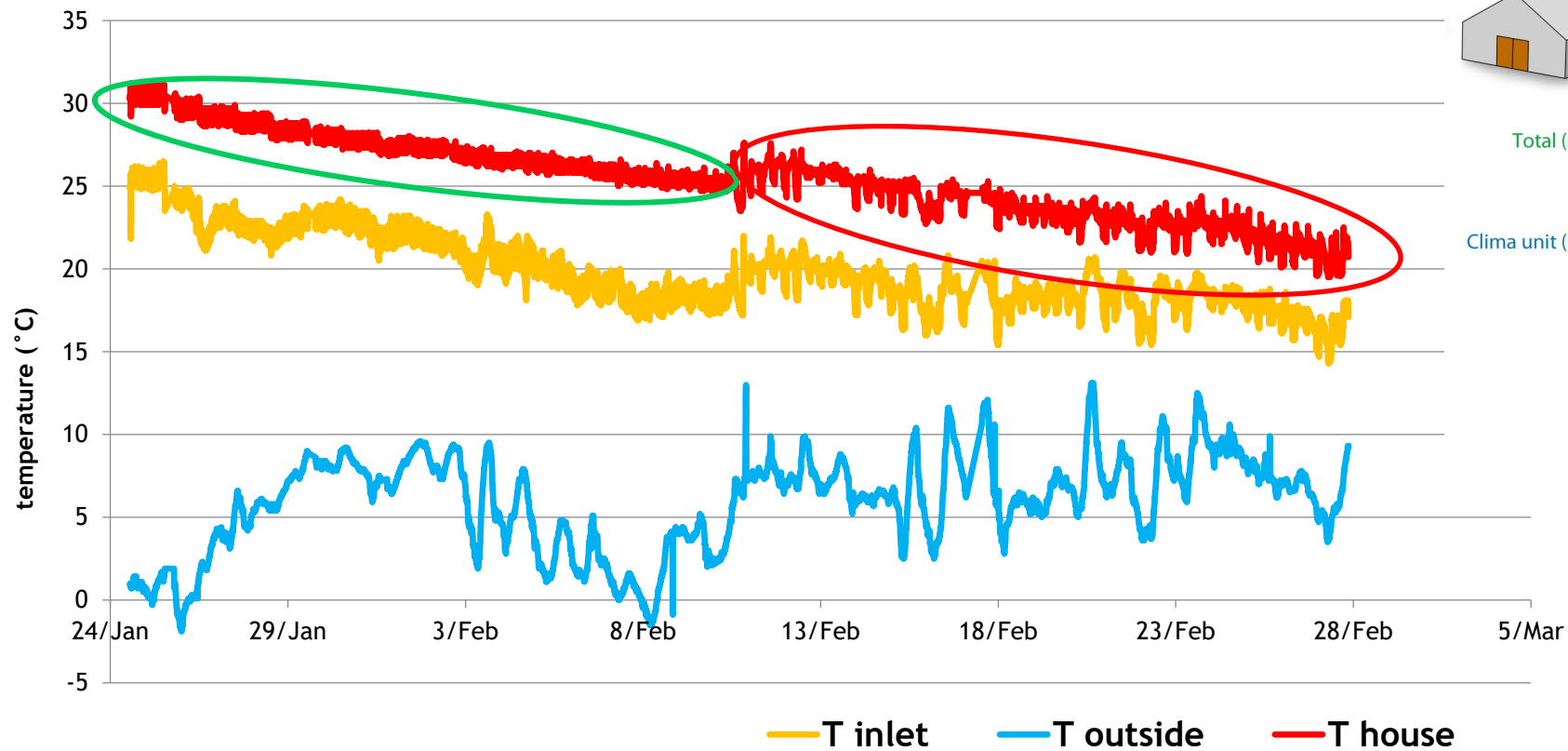
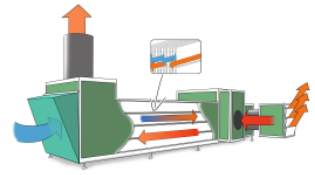


Ventilation by unit =
equal pressure (0 Pa)

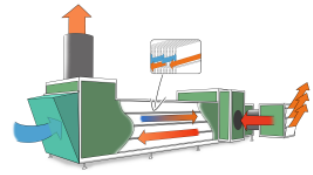
Normal ventilation =
negative pressure (- Pa)



Temperature fluctuations



Reduction heating costs

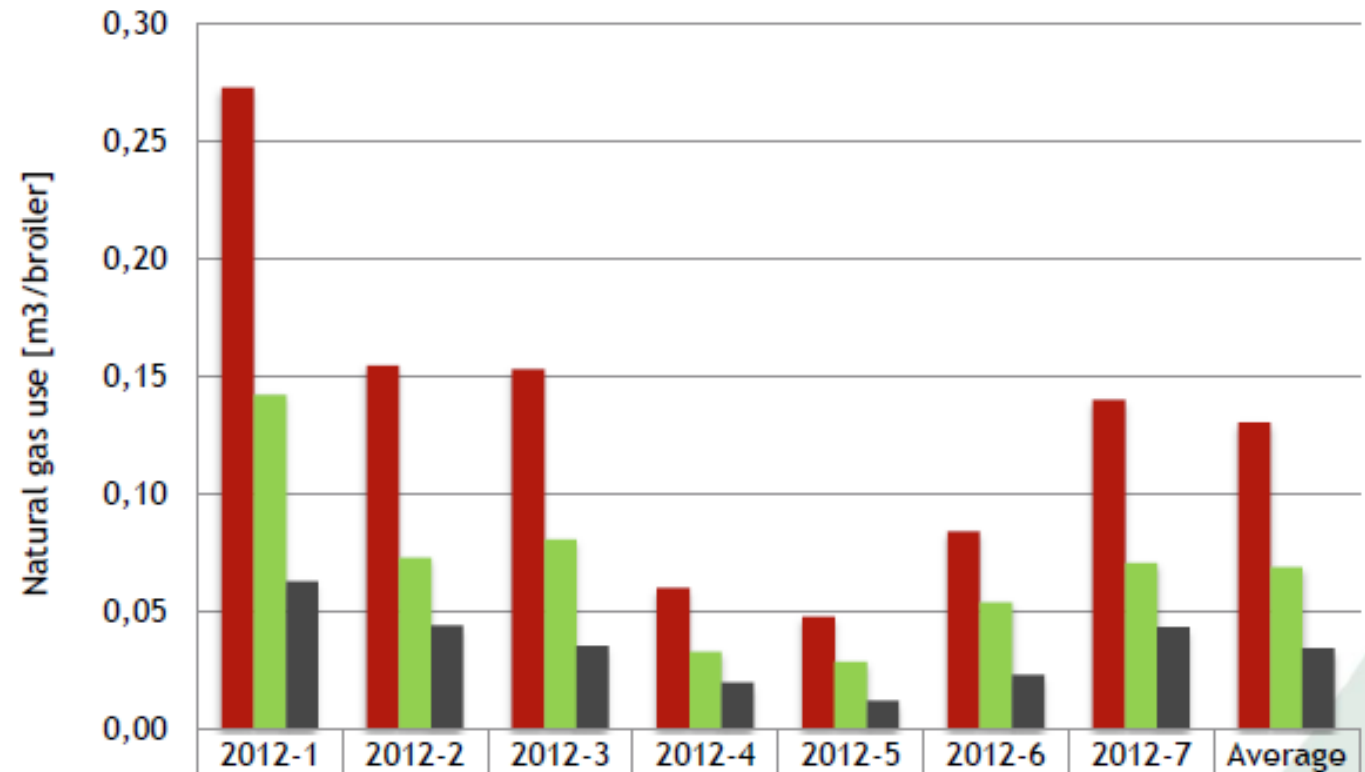


Energy use broilers natural gas

Research design:

- 3 animal houses at 1 farm in The Netherlands
- 26000 broilers per house
- Data collected in 2012
- Cycle length 42 days, unloading at day 35

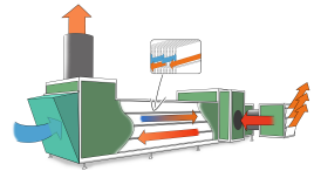
Natural gas use broiler houses with and without heat exchanger 2012



	2012-1	2012-2	2012-3	2012-4	2012-5	2012-6	2012-7	Average
■ Reference house	0,27	0,15	0,15	0,06	0,05	0,08	0,14	0,13
■ House + CU 0.35 m3/hour per animal	0,14	0,07	0,08	0,03	0,03	0,05	0,07	0,07
■ House + CU 0.85 m3/hour per animal	0,06	0,04	0,04	0,02	0,01	0,02	0,04	0,03



Reduction heating costs



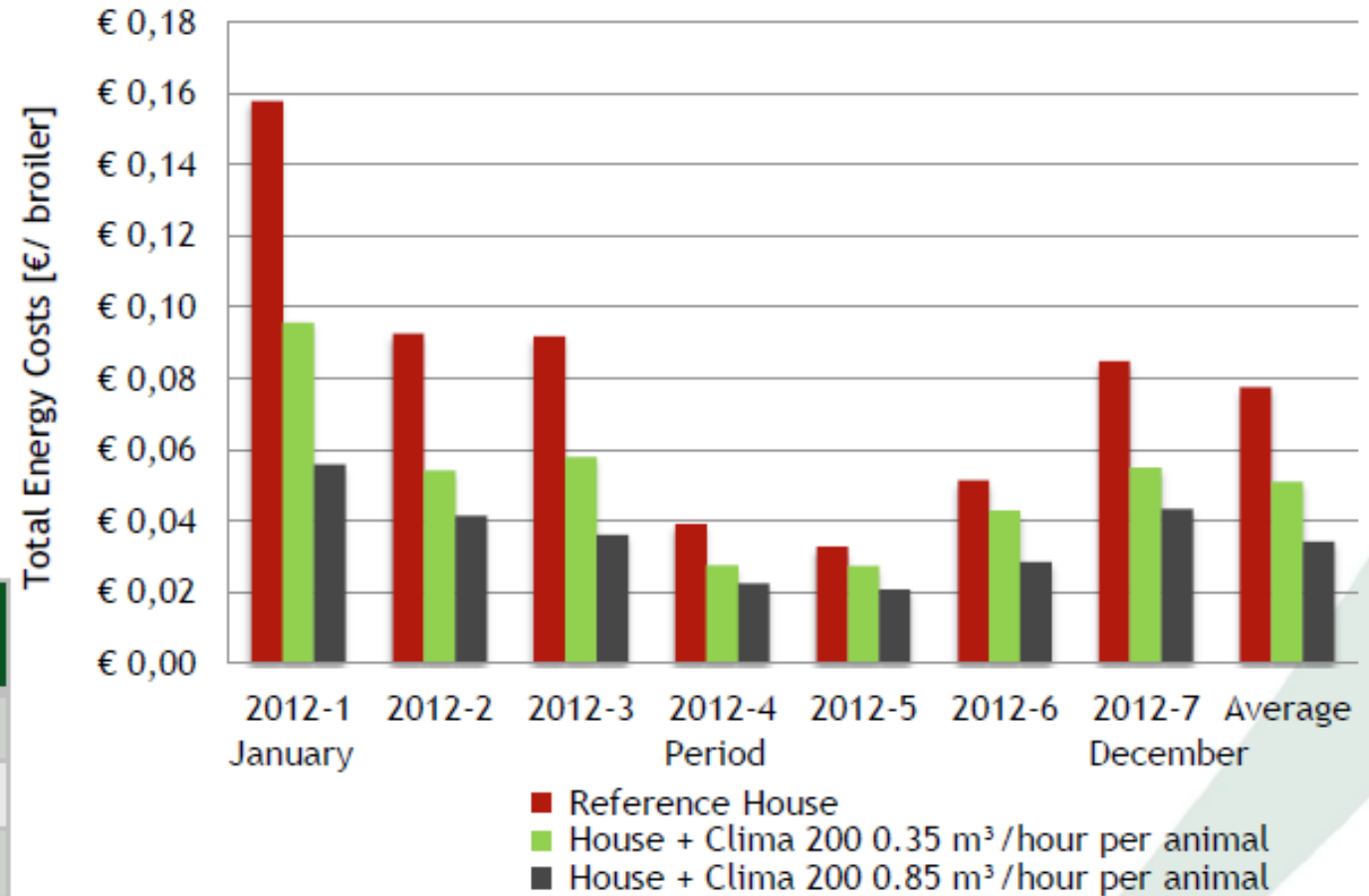
Reduction Total Energy Costs Broilers Clima 200

Research design:

- 3 animal houses at 1 farm in The Netherlands
- 26000 broilers per house
- Data collected in 2012
- Price electricity € 0,12 per kWh
- Price natural gas € 0,55 per m³

Item	Total energy costs [€ /broiler]	Reduction
Reference house	€ 0.078	0%
Clima+ 0.35 m ³ /h/broiler	€ 0.051	34%
Clima+ 0.85 m ³ /h/broiler	€ 0.034	56%

Reduction Total Energy Costs [Gas + Electricity] Broilers Clima 200



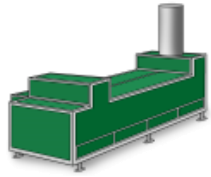
Relative Humidity



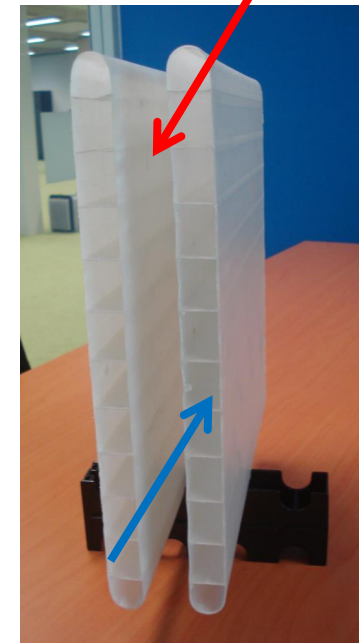
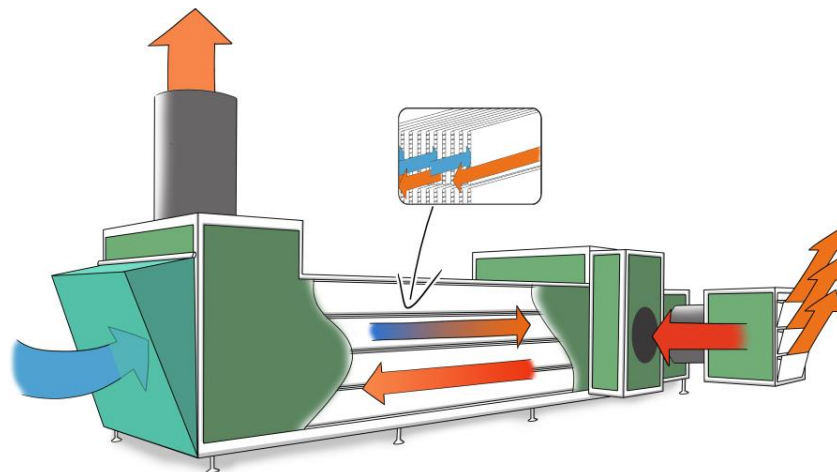
Real world example - Broiler Breeders



Environmental Benefits - Fine Dust Reduction

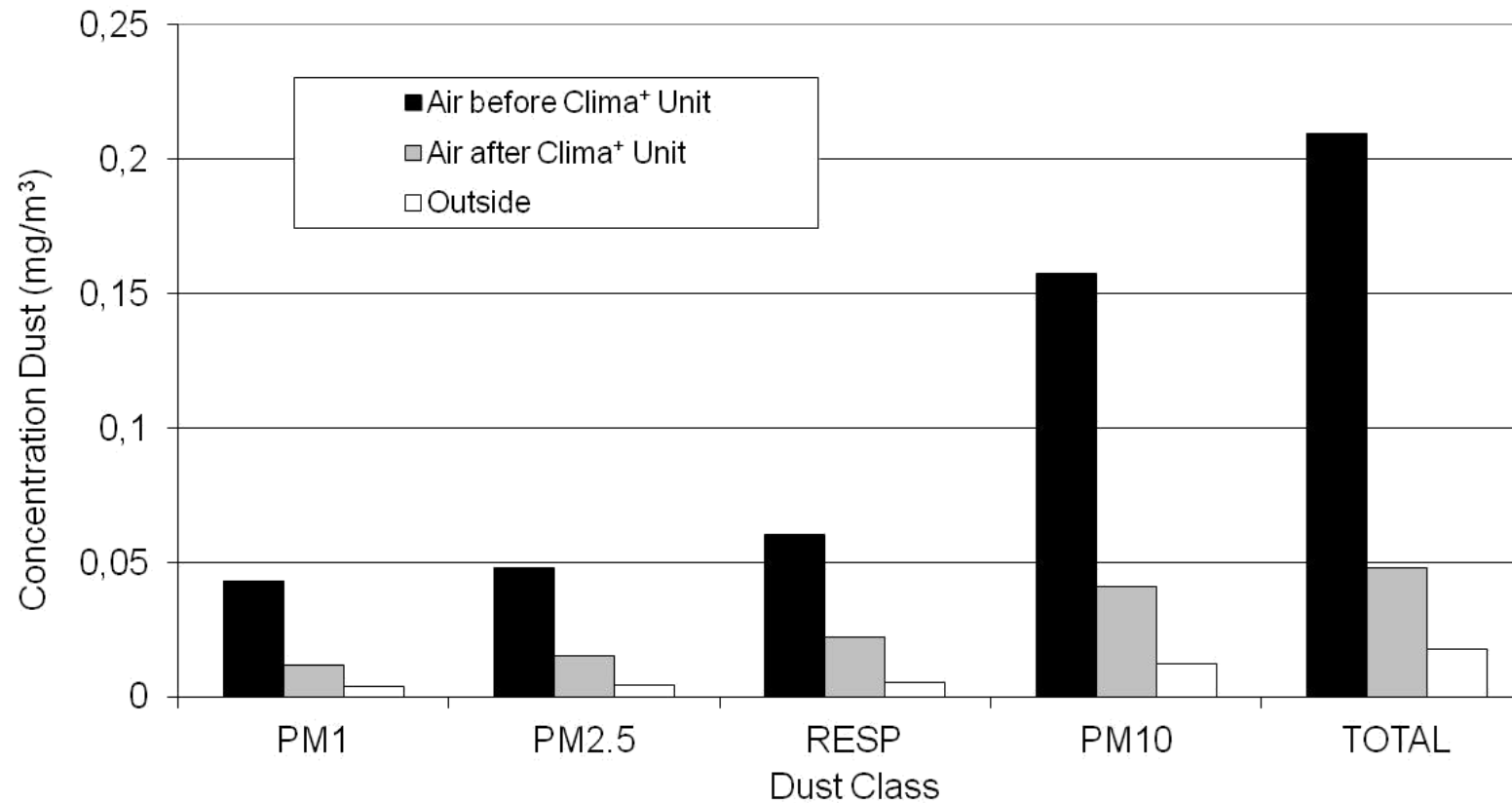


Condensation



Environmental Benefits - Fine Dust Reduction

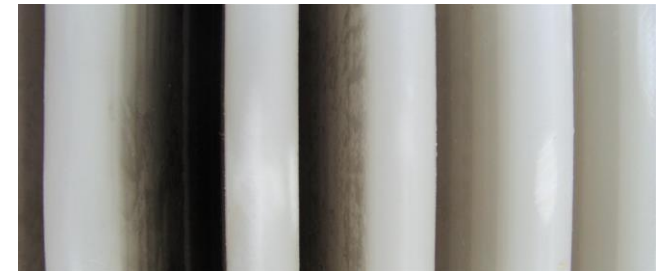
Dust concentration outside, before and after Clima⁺ Unit



Dirty unit



Clean unit



Summary: the challenges and the solutions

Challenge	ECO Unit for min. ventilation	ECO Zero	ECO Zero Air Pathogen Free	ECO Air Care
Optimal minimum ventilation	✓	✓	✓	✓
Optimal maximum ventilation/cooling		✓	✓	✓
Energy savings for heating	✓	✓	✓	✓
Ammonia reduction	25-50%	25-50%	25-50%	90%
Fine dust emission reduction	15-50%	80%	80%	80%
Airborne disease control intake air			✓	



Thank you!

